

In the Drawings:

New Figures 1 and 2 are included, showing sidewalls 50 and bottom 52; defining a cavity 56 having an entry port 54 through which scrap enters the cavity. No new matter is added thereby.

In the Title:

Applicant requests that the following title be substituted for the current title:

--INVALIDATING DEVICE FOR STACKS OF THIN, PLANAR OBJECTS--

In the Specification:

Applicant requests that the following amendments to the specification be entered.  
No new matter is added. A substitute specification is attached.

Page 1, first paragraph:

The invention concerns a device for invalidating planar [plane] objects by perforation means, in particular, invalidating stacks of defective thin, planar products in the securities sector, such as banknotes, notes of value etc., by perforating means.] having a horizontal base plate onto which the objects to be invalidated are placed, and having die plates which are vertically movable and parallel to said base plate, and having a drive mechanism by which the die plates can be displaced up and down. Furthermore, the invention concerns a method of invalidating such objects.

Page 1, third paragraph:

In other known invalidating machines, the paper is drilled by means of a drilling machine. The advantage of this machine is that the total thickness of the product to be invalidated can be greater than in the case of an invalidating machine [operating with pins] using punches.

Page 2, second paragraph:

The invention has the further object of achieving an inline invalidation of planar [plane] objects, in particular products in the securities sector, such as banknotes, notes of value or coupons, in which the invalidation of defective security products is guaranteed with a machine of an acceptable overall size, and in which a greater total thickness of the products than was previously possible can be processed.

Page 2, lines 25 to 30:

Figure 2 shows a schematic side view of the invalidating device, [ and ]

Figure 3 shows a detailed front view of the invalidating device, and [.]

Figure 4 shows a block-diagram of an invalidating process according to the invention.

Page 3, first paragraph:

As represented in Figures 1 and 2, the invalidating device has a base plate or cutting plate 09, onto which the material to be punched 14, i.e. the objects to be perforated, is placed[.]. Parallel [parallel] to this base plate 09 is a die plate[s] 04 [, comprising] which comprises a pressing plate 13[, which is] screwed to a support 03 by screws 15, a guide plate 17 and a [drill] punch-receiving plate 18 (Figure 3) [, and with] into which punches [drills] for perforating the material to be punched 14 are received. The support 03 has sidewalls 50 and a bottom 52 defining a cavity 56. The cavity 56 of

the support 03 can thus serve [is shaped in such a way that it serves at the same time] as a receptacle or container for the scrap punched upwardly through a port 54 [from punching]. An industrial vacuum cleaner may be connected at a connection 08 for the automatic suction removal of the paper scrap.

Page 3, third paragraph and fourth paragraphs:

An eccentric shaft 02 is turned by a hydraulic cylinder 01 in such a way as to produce a travel of the support 03 and of the die 04 of several millimeters, approximately 20 mm. Of course, other means may be used to displace the support vertically. The support 03 is guided on both sides by running rollers 05, it being possible for pairs of running rollers to be eccentrically mounted in order to make the guidance free from backlash. Such means thus allow a very good guiding of the plates vertically and maintain the force actuating the invalidating device perpendicular to the surface of material to be punched 14 (see figure 3). The travel executed can be controlled by contact 06 mounted in the machine and cooperating with pin 07, which is fitted on the eccentric shaft 02. Hence, the rotation of the eccentric shaft 02 can be stopped when the [drill] punches 19 have punched the material 14 (see figure 3).

The invalidating device is described in more detail with reference to Figure 3. It mainly comprises the following elements: base plate or cutting plate 09, guide plate 17, [drill] punch-receiving plate 18 and pressing plate 13. The pressing and [drill] punch-receiving plates 13, 18 are connected to the guide plate 17 by spacer rings 21 and springs 22. These plates are guided parallel to the base plate by means of guide bars 25, which are fixedly connected to the base plate 09.

Page 4, all full paragraphs:

The paper [drill] punches 19 are mounted on the [drill] punch-receiving plate 18 and are inserted with shims 20 between receiving plate 18 and pressing plate 13 such that they are free from backlash. The paper [drill] punches 9 are made of hard metal, such as hard steel, with a hollow configuration and are guided in the vertical direction by means of guide bushings 27 in the guide plate 17. Provided in the base plate or cutting plate 09 are interacting cutting bushings 23, which serve as a counterpiece for the paper [drill] punches 19 during the invalidating operation. Said bushes 23 are also made of hard metal, such as steel.

During the invalidating operation, the guide plate 17, actuated by the pressing plate 13 through the eccentric shaft 02, slides along guide bars 25 onto the material to be punched 14, for example a bundle of banknotes, and acts via the springs 22 as a pressing plate, before the paper [drill] punches 19 enter the material to be punched 14. The pressing plate 13 continues then its downwards motion, guided along the spacer rings 21, and the paper [drill] punch 19 are forced in the material to be punched 14, since the eccentric shaft 02 continues its rotational motion in the same direction. The paper [drill] punch 19 are guided in the guide plate 17. Because the base plate 09 has a cutting bushing 23, corresponding to each paper [drill] punch 19, all the paper scrap generated during perforating of the material 14 by the hollow paper [drill] punch 19 is pushed forward inside the hollow paper [drill] punches 19. In addition, the paper [drill] punches 19 are open at the upper end, so that the paper scrap is ultimately pushed out into the support 03 and collected at the top. A suction removal of the scrap can take place via the connection 08 (Figures 1 and 2).

Ejectors 24 are provided in the cutting bushings 23 for pushing out the scrap from punching. The entry depth of the paper [drill] punches is chosen such that the ejectors 24 push the scrap from punching up in the paper [drill] punch 19. For reliable functioning, it must preferably be ensured that the upper edge of the ejectors 24 is several millimeters lower than the upper edge of the cutting bushing 23.

The force of the springs 22 during the return travel is generally not enough to pull the paper [drill] punches 19 out of the material being punched, once the invalidating operation has been carried out and the material that has been punched is also lifted together with the plates 13, 17 and 18 by eccentric shaft 02. For this purpose, four adjustable stops 16 which limit the path of the guide plate 17 in the upward direction are provided on the side walls 11 and 12 of the punching machine. When the guide plate 17, the [drill] punch-receiving plate 18 and the pressing plate 13 are lifted off by means of the hydraulic cylinder 01 and the eccentric shaft 02, at first the guide plate 17 is stopped in its upwards movement by the stops 16. The further movement of the eccentric shaft 02 then lifts off only the [drill] punch-receiving plate 18 and the pressing plate 13, along the shims 20 with the paper [drill] punches, until the paper [drill] punches 19 have been pulled completely out of the material that has been punched 14 and they return in their starting position (Figures 1 and 3).

The stops 16 are of course set when the die is not loaded and may be adjusted to comply with the size of the invalidating device which is mounted between side walls 11, 12.

The number of paper [drill] punches depends on the dimensions of the objects to be perforated. With a product of 100 × 200 mm in size, up to 12 holes ( $\varnothing$  10 mm) can be [drill] punched. With such a machine, it is thus possible for all 12 holes to be punched simultaneously. In the case of products in the securities sector, the total thickness may be 8 to 15 mm.